# EVO

User's Manual and Laser Safety Guide

wicked lasers

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**www.wickedlasers.com**

# FOREWORD

First and foremost, **we are laser enthusiasts**. We desire nothing more than to achieve perfection in our craft. For us, pushing the limits of technology is part of our daily routine. It's only impossible if we don't try.

As we continue to advance in our search for perfection, we've set benchmarks for others to follow and new limits for us to test. This is our mission. We plan to continually push the boundaries of technology and create products that challenge the imagination far into the future.

wicked lasers

GUINNESS
WORLD RECORDS
CERTIFICATE
The Spyder Green 300 is the most powerful battery powered handheld laser commercially available. Made by Wicked Lasers (China), the class IIIb device has an average output of 300 milliWatts (mW) with peak readings of 420 mW. At close range it can ignite matches, cut tape and pop balloons.

We wanted to create the world's most powerful handheld laser - we succeeded and inadvertently set a world record in doing so. We are extremely proud to be included in the **Guinness Book of World Records for 2007**. This will serve as a testament to our commitment to providing the world with the most sophisticated laser products technology can offer.

Designed and developed by some of the world's best engineers, the **Spyder Series** stands at the pinnacle of laser technology. Lithium powered, water resistant and ultimately powerful, the **Spyder Series** is our most advanced line of handheld lasers to date.

We still have much to prove as there is still a world of possibilities in front of us. Our quest to turn science fiction into reality has only just begun.



# **Table** of Contents


| | |
|---|---|
| EVO Laser Series Technical Specifications | 3 |
| EVO Laser Series Diagram | 4 |
| Using Your Laser: How to Power On | 5 |
| Using Your Laser: The SmartSwitch | 6 |
| Using Your Laser: The Smartport | 7 |
| Using Your Laser: Programming the EVO | 10 |
| Safety and Maintenance | 13 |
| Lens Cleaning Procedure and Troubleshooting | 14 |
| Types of Common Lens Problems | 15 |
| Limitation of Liability | 18 |
| Manufacturer's Warranty | 19 |

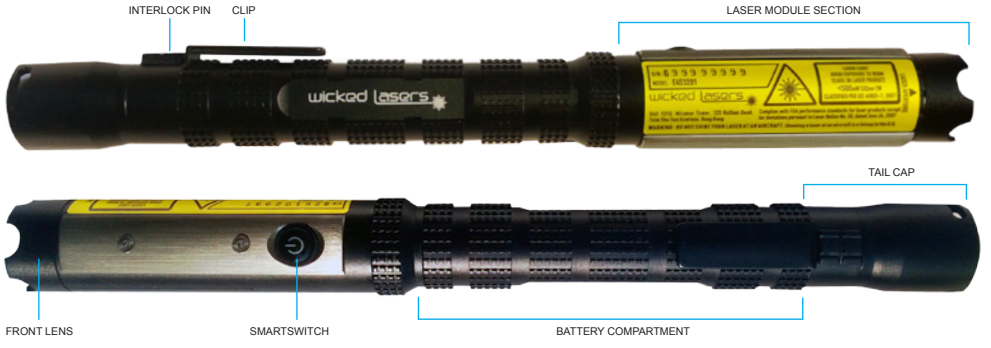
# **EVO Laser** Technical Specifications

| | |
|---|---|
| Model Name: | **EVO Series** |
| Laser Product Class: | 3B |
| Wavelength: | 532nm |
| Size: | 226.5mm x 25.3mm |
| Weight: | 150g (no battery) |
| Laser Body: | 6061-T6 Aircraft-Grade Aluminum |
| Laser Finish: | Mil-Spec Type III hard anodized in black |
| Transverse Mode: | TEM00 |
| Max Power: | 100mW |
| Beam Divergence: | 1.5mRad |
| Beam Diameter: | 2.0 mm |
| NOHD* | 47 meters |
| Required Eyewear O.D. | 2.0+ |
| Power Consumption: | 3V |
| Power supply: | 2x AA 1.5V Alkaline Batteries |
| Battery Lifetime: | 60 - 120 minutes |
| Switch: | Push Button Constant On / Off, Lock-Out Tail Cap, Electronic Mode switch |
| Modes: | Variable Power modes, Strobe and Continuous Wave modes, Standby and Secure Lock/Unlock modes |
| Duty Cycle: | Continuous |
| Expected lifetime: | >5,000 hours |
| Warranty: | One Year |

S/N:
MODEL: E453201
wicked lasers
Unit 1010, Miramar Tower, 123 Nathan Road, Tsim Sha Tsui Kowloon, Hong Kong
Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007
LASER LIGHT
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT
<500mW 532nm CW
CLASSIFIED PER IEC 60825-1, 2007
LASER APERTURE
WARNING: DO NOT SHINE YOUR LASER AT AN AIRCRAFT. Shooting a laser at an aircraft is a felony in the U.S.

*Nominal Ocular Hazard Distances are for 0.25 second accidental (unaided eye) exposure.

## **Laser** Diagram








## **Using Your Laser** : How To Power On

Rotate the laser module section counter clockwise to open.

Insert two “AA” batteries with the positive (+) end first and reconnect the laser module section.

Press the button located on the tail cap to power-on the laser.

# **Using Your Laser** : The SmartSwitch

To operate the laser, it must first need to be unlocked via the SmartSwitch.

## How to use the SmartSwitch:

1) Unlock the laser with **three quick clicks + two short holds**.

2) **Holding the SmartSwitch continuously** will gradually increase the power, the laser will flash once to indicate that the maximum power has been reached.

3) While in high-power mode, **holding the SmartSwitch continuously** again will gradually decrease the power, the laser will flash once to indicate that the lowest power has been reached.

4) A **quick press** will put the laser in hibernation mode, another quick press will turn it back on.

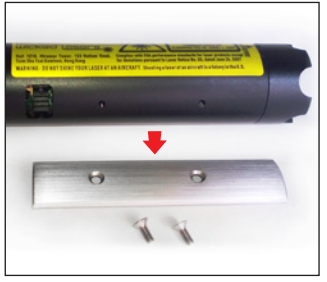
5) **Double clicking** the SmartSwitch will put the laser in strobe mode. To exit this mode, simply double click again.

6) To set the laser to **full-power / momentary mode**, hold the SmartSwitch + press the tailcap button. The laser will now only work whenever the SmartSwitch is pressed. To exit this mode, turn off the laser by pressing the tailcap button.





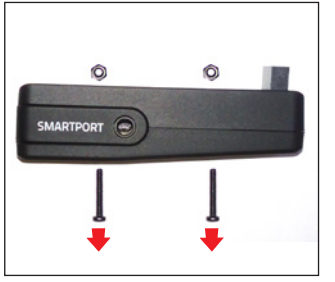
# **Using Your Laser** : The Smartport



Please visit http://www.wickedlasers.com/evo to download the app for your smartphone.

Remove the bottom metal panel to access the connection area for the Smartport.

Remove the jumper shown here before connecting the Smartport.




Remove the screws on the Smartport.

## Using Your Laser : The Smartport

Connect the Smartport to the laser module section.

Use the two screws to secure the Smartport in place.

There are two options for connecting the Smartport with your device:
1) AV Cable
2) Bluetooth Accessory

**<Option 1>** Connect the AV cable to the Smartport.

Connect the other end of the AV cable to the headphone jack of your smartphone device then run the EVO laser app.



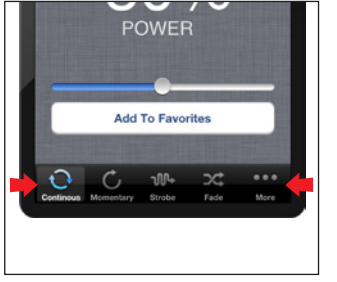


## Using Your Laser : The Smartport

**<Option 2>** Connect the Bluetooth adapter to the Smartport and switch it on.

Pair the Bluetooth adapter with your smartphone device then run the EVO laser app.

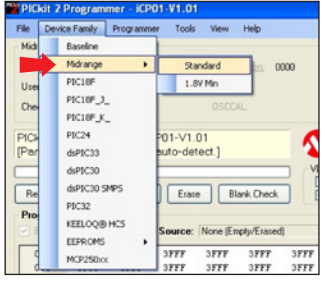
Turn the laser on by pressing the the button on the tail cap.




The laser will start in Continuous Mode by default. You may select other operating modes from the menu bar.

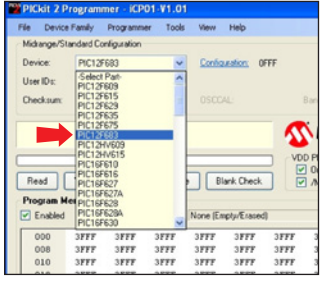
The main operating modes are Continuous, Momentary, Strobe and Fade.

# **Using Your Laser** : Programming the EVO

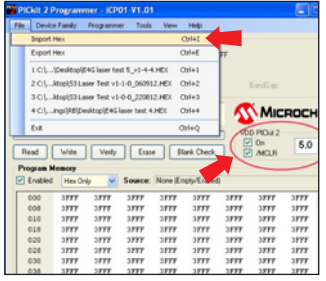



Download and install the Microchip PicKit programming software. Run the program.

Under “Device Family” select “Midrange” devices and “Standard”.




In the “Device” dropdown menu, select “PIC12F83”.




Select “File” then “Import Hex”. Find the location of your Hex file to import it.

Make sure that “On” and “/MCLR” are both checked in the VDD PICKit 2 section.

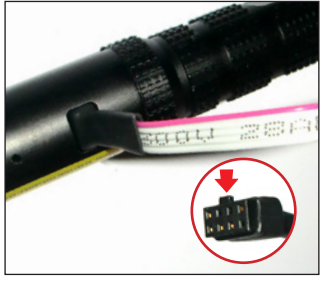




**Using Your Laser** : Programming the EVO

With the laser powered off, remove the bottom metal panel.

You will see the port where to connect the Programming Plug. Remove the jumper first.



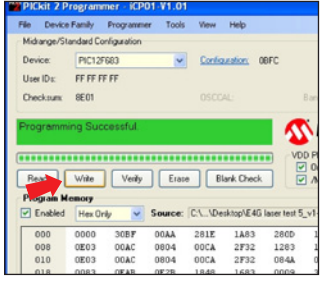
Connect the Programming Plug. Make sure that the notch on the plug is facing the front of the laser.

If the laser is facing left, the red wire should be on top when properly connected.

# **Using Your Laser** : Programming the EVO

Please cover the aperture of the laser and then connect the USB end of the Programming Plug to your PC.

Click on the tailcap button to turn the laser on.




In the PicKit program, click on "Write" then wait for it to display "Programming Successful".

Disconnect the Programming plug, put back the jumper and metal plate.





# **Safety** and Maintenance

**CAUTION** - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

1. **No scheduled maintenance necessary to keep the product in compliance.** Simply keep the laser free from dust or other contaminates that could cloud or dirty the laser lens or crystal array and operate within recommended parameters.

2. **Avoid direct eye and skin exposure to the laser beam.** Direct contact with the beam can instantly cause severe and irreparable eye damage. Note that a reflected laser beam can be just as powerful as directly coming from the laser unit itself.

**Laser Light – Avoid Exposure to Beam**
**Class 3B Laser Product**

3. We strongly recommend using the LaserShades that come with this laser or wearing similar approved laser safety eyewear.

4. **Do not take apart, modify or dismantle the laser** or operate it under abnormal current load (doing so will void the warranty). **Strictly no service is allowed.**

5. Operate your laser only within the specified temperature range of 10°C (50°F) to 40°C (104°F).

6. Should you have difficulty operating the laser properly and troubleshooting does not work, go to www.wickedlasers.com for support and **RMA** assistance if necessary. **Do not attempt to service, modify or fix the laser yourself.**

7. **Do not shine your laser at an aircraft.** It may cause a distraction to the pilots putting the aircraft's passengers at considerable risk. **Shooting a laser at an aircraft is considered a felony in the U.S.**

*For more safety information & guidance please refer to **ANSI Z136.1 (2007) Safe Use of Lasers** available at the Laser Institute of America website: **www.laserinstitute.org**

# **Lens Cleaning** Procedure and Troubleshooting

## What you need :

1. **Microfiber Cloth** - Please make sure the microfiber cloth is specifically designed for cleaning lenses. You can find this at your local camera or glasses store.

2. **Q-Tip or Tooth Pick** - You will need to fold the cloth over one of these in order to be able to reach the lens properly.

3. **Lens Cleaning Solutions** (Optional) - Use the lens cleaning solution only if the lens is not cleaned using the microfiber cloth alone. Please make sure the cleaning solution is designed specifically for lens cleaning.

**WARNING :** DO NOT USE WATER

## Procedure :

1. Wash your hand with soap and water. Make sure to dry them properly.

2. Remove the batteries from your laser prior to cleaning.

3. Fold the microfiber cloth over a toothpick or the handle part of a Q-tip. Make sure you do not touch the part of the cloth that will be cleaning the lens. You probably will not be able to fold the cloth twice, so you need to be very careful not to press too hard on the lens.

4. Gently move the cloth into the aperture until it comes in contact with the lens. Rub it from side to side but do not press too hard. Gently rotate the cloth in a twisting motion back and forth. Repeat this procedure until the lens of your laser is clean.

5. Re-insert the batteries and turn your laser unit on to see if the lens is clean.

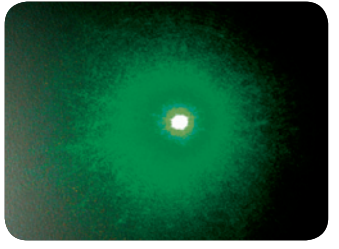
6. **Still dirty?** Apply only 1 drop of **Lens Cleaning Solution** to the part of the cloth that will be cleaning the lens, the follow the same procedure as above. You will want to finish by using a dry part of the cloth to wipe the lens dry, this should take one pass side to side or gentle rotate.



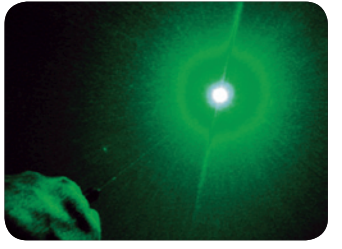


# Types of Common **Lens Problems**

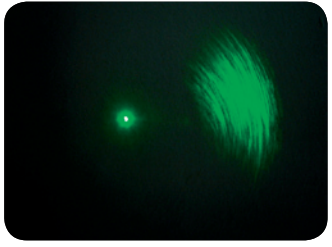
1. **Dirty Lens -** The most common problem with your laser unit is a dirty lens. The easiest way to determine whether you have a dirty lens is to look at the lens under direct light. If you see smudges, finger prints, or small particles on the lens, the beam emitted will look similar to the above pictures. Simply follow the cleaning instructions to restore the spot back to a focused dot.

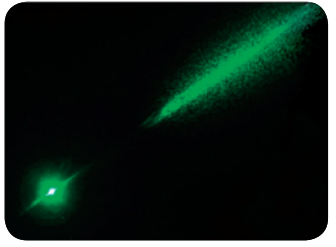


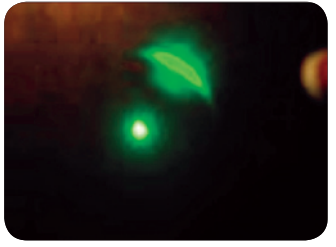
2. **Scratched Lens -** A scratched lens may occur if you accidentally scratch the lens with a hard or rough surface. The lens of your laser unit is similar to that of a camera, please handle with care. This condition can be repaired by Wicked Lasers, however, will not be covered in your warranty. A repair cost will apply.



# Types of Common **Lens Problems**





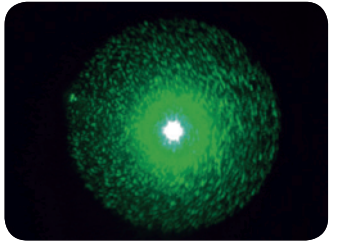


3. **Mode Shifts -** A mode shift may occur under extreme temperatures. If your laser unit is too hot or too cold, the beam may appear unstable and look similar to the above pictures. Please note that as your laser "warms up" and returns to room temperature, the beam will return to normal mode, TEM00. The normal operating temperature of all Wicked Laser products is 10ºC ~ 40ºC. Using your laser unit beyond these parameters will damage your laser beyond repair.





# Types of Common **Lens Problems**



4. **Moisture -** We do not recommend using any laser products in highly humid or foggy conditions. If your laser unit is used in these conditions and/or submerged in water, the beam may appear similar to the above picture. You will not be able to clean this as water has condensed inside the lens and/or crystal set. This condition can be repaired by Wicked Lasers, however, will not be covered in your warranty. A repair cost will apply.

   *This condition may occur if you are using the laser unit with wet hands. Please dry your hands completely before handling your laser unit.

## **Limitation** of Liability

In no event shall Wicked Lasers or any of its subsidiaries or affiliates be liable for any indirect, special, incidental or consequential injury to persons or damage to property caused by the use of any of our products. By purchasing from Wicked Lasers, you hereby indicate that you understand and agree to the following:

- I am 18 years of age or older.
- I am fully responsible for the safe application and use of this laser and agree to such by completing the sale process.
- I will never look directly into the beam or point the beam at any person's or animal's skin, eyes or other body part.
- I will not point the laser at any aircraft or moving vehicle of any sort.
- I will not use a laser device without wearing approved laser safety goggles designed for such purpose.
- I will never remove the laser's infrared filter.

I will not use the laser in violation of any local, state or federal law, and I understand that it is my responsibility to know and abide by those laws relating to the ownership and use of lasers in my jurisdiction.



## **Manufacturer's** Warranty

All EVO Series lasers come with a standard 12 Month Manufacturer's Warranty. Our warranty guarantees your laser to be free from defects in manufacture and workmanship.

**All defective lasers will be replaced or repaired subject to the full discretion of Wicked Lasers.**

Ownership of the warranty is not transferable and will expire exactly 12 months from the date of receiving the purchase.

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1-877-952-7377
Unit 1010, Miramar Tower, 132 Nathan Road, Tsim Sha Tsui Kowloon, Hong Kong
www.wickedlasers.com | support@wickedlasers.com

# **Manufacturer's** Warranty

This warranty does not include defects or damages attributable to misuse, normal surface weathering, or damages caused by accidents or fire or other casualty or force majeure or any other causes or occurrences beyond the manufacturer's control.

To claim your warranty, please send this form or email **support@wickedlasers.com** with the following information:

Full Name: _____

Address: _____

_____

_____

Order ID / Laser Model: _____

Reason for Claim: _____

1-877-952-7377

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